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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/854,918	05/15/2001	Hyung-gon Noh	1568.1013	7552

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EXAMINER

TSANG FOSTER, SUSY N

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 04/23/2003

5

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/854,918

Applicant(s)

NOH, HYUNG-GON

Examiner

Susy N Tsang-Foster

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17 and 18 is/are allowed.
- 6) ☒ Claim(s) 1,3-7,9-11 and 14-16 is/are rejected.
- 7) ☒ Claim(s) 2,8,12 and 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2, 4
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Information Disclosure Statement*

2. The information disclosure statement filed on 5/15/2001 has been considered by the Examiner.

### *Specification*

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
4. The disclosure is objected to because of the following informalities: On page 3, paragraph 13, it is unclear what is meant by "swelling of the electrolyte solution".

Appropriate correction is required.

### *Claim Objections*

5. Claims 3 and 9 are objected to because of the following informalities: In claims 3 and 9, the substituent group " $(\text{CH}_3)_2\text{NCH}$ " in formula (2) does not appear to be correct and it appears that it should be " $(\text{CH}_3)_2\text{NCH}_2$ " for charge balance in the compound. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 3, 6, 7, and 9 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by the CAPLUS abstract for Peng et al. "Ionic Conductivity of epoxy network/polyethylene glycol-lithium perchlorate complex IPN system" in Chinese Journal of Polymer Science (1990), 8(4), 342-6.

See the CAPLUS abstract for the reference.

***Claim Rejections - 35 USC § 103***

8. Claims 1, 4-7, 10, 11, and 14-16 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Andrieu (US 5,290,644).

The product-by-process limitations of claims 1, 4-7, 10, 11, 14, and 15 are not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (see In re Thorpe, 227 USPQ 964, (CAFC 1985), In re Brown, 173 USPQ 685 (CCPA 1972), and In re Marosi, 218 USPQ 289, 292-293 (CAFC 1983)).

Specifically, the limitation "a crosslinked product of (i) a prepolymer for forming an epoxy resin, (ii) an amine, (iii) a lithium salt, and (iv) an organic solvent" is a product-by-process

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limitation. A crosslinked product comprising a polymer epoxy resin, an amine, a lithium salt, and an organic solvent meets the product-by-process limitation.

Andrieu discloses a lithium battery comprising an spiral electrode assembly (winding type electrode assembly) and a polypropylene separator between the anode and the cathode (col. 1, lines 46-62; col. 3, lines 1-25). A film of a cross-linked polymer that swells is in contact with the electrolyte solvent is in contact with the polypropylene separator and the positive electrode (col. 3, lines 20-35). The spiral electrode assembly is soaked in a solution of propylene carbonate and dimethoxythane containing 1 M lithium perchlorate in order to swell the cross-linked polymer (col. 3, lines 20-35). The cross-linked polymer is obtained by crosslinking an amine containing polyethylene glycol with a polyepoxy resin (col. 2, lines 61-67). The molar concentration of the epoxy to amine is 0.5 to 5 (col. 2, lines 5-19). The cross-linked polymer may comprise up to 80% solvent (col. 2, lines 35-37).

***Allowable Subject Matter***

9. Claims 2, 8, 12, and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claims 17 and 18 are allowed.

***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Akhtar (US 5,096,561) discloses thin film conductors obtained by crosslinking poly(ethyleneimine) with a halocarbon based diepoxide (see abstract). In one example, the diepoxide is obtained from the reaction of a fluorocarbon benzene (see formula (3)) with epichlorhydrin) (col. 4, line 20 to col. 5, line 9). The diepoxide is not a prepolymer based on the definition of a prepolymer given by "What you need to know about composites/plastics" website. The definition of prepolymer from the website is a polymer of relatively low molecular weight, usually intermediate between that of the monomer and the final polymer or resin, which may be mixed with compounding additives, and which is capable of being hardened by further polymerization during or after a forming process. Definition obtained from "What you need to know about composites/plastics with Barry Berenberg". definition for prepolymer. copyright 1989 CRC Press LLC. [online]. About, Inc., 2003 [retrieved on 2003-3-28]. Retrieved from the Internet: <URL: <http://plastics.about.com/library/glossary/p/bldef-p4237.htm>>

12. Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (703) 305-0588. The examiner can normally be reached on Monday through Thursday from 9:30 AM to 8:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (703) 308-2383. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900.

The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9310 for regular communications and (703) 872-9311 for After-Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

st/21 April 2003

A handwritten signature in cursive script, reading "Amy Lee Foster". The signature is written in black ink and is positioned in the lower-left area of the page.